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From the Director's Desk

NIOSH epidemiologic studies and technical assistance help workers exposed to occupational radiation.

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"Breakthrough" program assists administrators with reducing on-the-job respiratory exposures to potentially harmful organic vapors.

Improved, NIOSH-Developed Isocyanate Exposure Method is Patented

Second of three NIOSH-developed isocyanate derivatizing reagents receives patent.

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Tentative interim amendment adds NIOSH CBRN protection criteria into NFPA Standards 1500 and 1994.

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From the Editor

From the Director's Desk

For more than 25 years, NIOSH has worked with the U.S. Department of Energy (DOE) and other partners to pursue an important and scientifically challenging mission. It involves the health of a dedicated group of people, the more than 600,000 men and women who worked for DOE and its predecessors in the U.S. nuclear weapons production industry during the Cold War. The questions facing NIOSH are these: Which of these individuals or groups of employees may be at risk of cancer or other adverse health effects from potential occupational exposures, decades ago, to radiation and other agents? In cases where individuals have contracted cancer, is it likely that the illness resulted from an occupational exposure?

Although scientists know much about the health effects of short, intense, high-level, non-occupational exposures to radiation, there are few data on the effects from exposures over longer durations at lower levels. To bridge this gap between the known and the unknown, NIOSH scientists meticulously apply complex mathematical analyses. They call upon their specialized knowledge of the health physics of radiation exposure, and their close familiarity with the working operations of nuclear facilities. NIOSH is proud of the efforts that we have invested with our partners in this effort, which involves two separate but related programs.

NIOSH Occupational Energy Research Program

One of these programs builds on a 1991 memorandum of understanding between NIOSH and DOE that was based, in turn, on studies that began in 1978. The memorandum of understanding transferred from DOE to NIOSH the responsibility for conducting epidemiologic studies of employees at the DOE sites. This research is intended to provide findings that may offer early warning of health risks that groups of former employees may face as a result of past employment at nuclear weapons plants. The findings also may provide early warning of potential risks to current employees who are engaged in decommissioning and de-contaminating these facilities now that the Cold War has ended. Under this program:

- NIOSH conducts both extramural and intramural research under DOE funding. Approximately one-third of those funds have supported over two dozen projects at universities and institutions across the U.S., mostly through the competitive grants process. http://www.cdc.gov/niosh/2001-133.html
- NIOSH solicits stakeholder input and peer-review to vet its protocols for intramural research projects. The “Agenda for HHS Public Health Activities for Fiscal Years 2003-2008,” available on line, explains the purpose of each project, and includes background information and proposed plans for future studies. The agenda is a collaborative product with the National Center for Environmental Health, the Agency for Toxic Substances and Disease Registry and DOE. http://www.cdc.gov/niosh/pdfs/hhsdoe_2003-2008.pdf
- NIOSH ensures that research results are communicated directly to workers, management and government officials at the DOE sites or other locations where a study has been completed. NIOSH’s communication goals are described on line at http://www.cdc.gov/niosh/2001-133d.html

NIOSH Role Under EEOICPA

In the second program related to the health of energy employees, NIOSH provides technical assistance to the U.S. Department of Labor (DOL), which administers the Energy Employees Occupational Illness Compensation Program Act (EEOICPA). Under this program, former nuclear production workers or their survivors may file claims for compensation for cancers and illnesses caused by past occupational exposures at nuclear weapons production facilities. NIOSH provides this assistance to DOL in several ways:

- Acting on claims referred by DOL, NIOSH conducts dose reconstructions to estimate the levels of radiation to which individual employees were exposed occupationally, in instances where no or few past exposure records exist. NIOSH works extensively with former employees, their families, employee representatives, and the Department of Energy to give claimants the fairest evaluation possible. NIOSH makes the process as transparent as possible, posting extensive information on its web page regarding the methods used to conduct dose reconstructions, numbers of dose reconstructions in process and completed, and answers to frequently asked questions. http://www2a.cdc.gov/ocas/
- NIOSH developed the scientific basis used by DOL to determine if a claimant’s cancer was likely to have been caused by occupational exposures. The scientific guidelines and other relevant information are posted

on the NIOSH web page. http://www.cdc.gov/niosh/ocas/ocasirep.html

- NIOSH developed a proposed set of rules that would guide the process by which claimants or their representatives would petition for a group of employees to be added to a category under EEOICPA called the Special Exposure Cohort, and the process by which NIOSH's parent department, the U.S. Department of Health and Human Services, would consider such petitions. Under EEOICPA, if a claimant in the Special Exposure Cohort has any of 22 designated types of cancer, the government presumes that the cancer was caused by an occupational exposure, and the claimant is not required to have a dose reconstruction and to have a determination that his or her cancer was likely to have been job-related. NIOSH solicited public comment on the proposed rules, and a final action is pending. http://www.cdc.gov/niosh/ocas/ocassec.html

New Computer Program Advances Guidance on Predicting Air-Purifying Respirator or Filter Cartridge Service Life

NIOSH announces new computer software that enables administrators of workplace respiratory-protection programs to consider the effects of relative humidity on the service life of NIOSH-approved organic vapor chemical cartridges. This software assists program administrators, in workplaces where air-purifying respirators are used, in reducing on-the-job respiratory exposures to potentially harmful organic vapors from a single volatile source, such as an individual paint, thinner, or solvent. The software resulted from research conducted by Los Alamos National Laboratory (LANL), in conjunction with a partnership between NIOSH, LANL, the Occupational Safety and Health Administration (OSHA), the International Safety Equipment Association, the American Chemistry Council, the Synthetic Organic Chemical Manufacturers Association, the National Paint Coatings Association, and the American Petroleum Institute, organized and led by ORC Worldwide. More information on the software can be found at http://www.cdc.gov/niosh/updates/upd-12-22-03.html. The new computer software, "Breakthrough" will be available shortly as a CD-ROM that can be ordered from NIOSH at 1-800-35-NIOSH. Downloadable copies of the software are currently available from the OSHA Web site http://www.osha.gov/SLTC/etools/respiratory/advisor_genius_wood/breakthrough.html. For more information contact Jay Snyder at JSnyder@cdc.gov.

Improved, NIOSH-Developed Isocyanate Exposure Method is Patented

Worker exposure to isocyanates is associated with the risk of occupational asthma and other serious respiratory effects, but measuring exposure is complicated by the chemical and physical diversity of isocyanate compounds in the variety of workplaces where they are used. A new analytical method developed by NIOSH researchers and patented on December 2, 2003 is the latest in a series of NIOSH innovations that makes exposure monitoring easier and more reliable. Patent No. 6,656,737 was issued to NIOSH's parent agency, the Centers for Disease Control and Prevention (CDC) for the invention "Isocyanate Derivatizing Agent and Methods of Production and Use." This patent relates to an analytical method for measuring individual isocyanates as well as total reactive isocyanate group (TRIG) using the reagent PAC (for additional technical details, see *Analyst* 125, 1691-1696 [2000]). PAC was developed by Robert Streicher, Young-Man Roh, and Kathleen Ernst of NIOSH's Division of Applied Research and Technology (DART). It is one of three isocyanate derivatizing reagents developed by DART researchers, the others being MAP (NIOSH Method 5525 and U.S. Patent 5,354,689 [1994]) and DAN (developed in collaboration with the University of Massachusetts Lowell, patent pending). The three reagents possess different strengths and weaknesses and selection between them would depend on the exposure scenario and the type of exposure assessment required (for example, whether one is measuring individual isocyanate species or total reactive isocyanate group). For more information on these methods, contact Robert Streicher at rstreicher@cdc.gov.

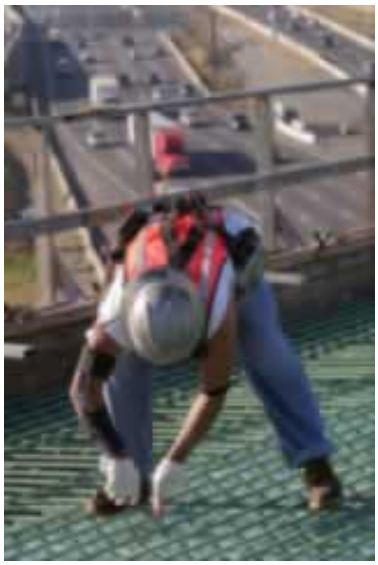
National Fire Protection Association Tentatively Incorporates NIOSH Criteria for CBRN Respiratory Protection

NIOSH's criteria for testing and certifying two types of respirators for use against chemical, biological, radiological, and nuclear (CBRN) exposures have been incorporated by the National Fire Protection Association (NFPA) as tentative interim amendments to two NFPA standards. On July 17, 2003, the NFPA Standards Council adopted a tentative interim amendment to NFPA 1500 that references NIOSH's criteria for testing and certifying self-contained breathing apparatus and full-face piece air purifying respirators for use against CBRN exposures. NFPA 1500 sets guidelines for fire service occupational safety and health. On January 4, 2004, the NFPA Standards Council approved a tentative interim amendment to NFPA 1994, referencing the NIOSH criteria in minimum requirements for protective ensembles and ensemble elements for fire and emergency service personnel exposed to CBRN agents in responses to terrorist incidents.

The tentative interim amendments automatically become proposed permanent changes to the two NFPA standards, subject to the procedures of the NFPA standards-setting process for the next editions of the standards. The last time the standards had been amended, NIOSH had not yet issued its CBRN testing and certification criteria. To learn more about the NIOSH criteria for CBRN respiratory protection, visit http://www.cdc.gov/niosh/npptl/respstdpg.html.

NIOSH Conducts Health Hazard Evaluation at Busy DC Freeway Interchange

NIOSH researchers recently conducted a Health Hazard Evaluation (HHE) at the I-95 and I-495 freeway interchange in Springfield, Virginia. An area construction contractor requested NIOSH assistance in evaluating workers' exposures to work-related musculoskeletal disorders (WMSD) during rebar tying and in evaluating a new tying method used to reduce exposures to WMSD risk factors. In rebar tying, workers use wire to fasten the rebar together at intersecting points to keep the bars from shifting when concrete is poured into the form. Traditional rebar tying involves using rapid hand movements and awkward hand postures and working in sustained deep forward flexion. However, these workers primarily used an automatic rebar tier to reinforce the concrete deck. Goniometry, electromyography, and video recording were used to collect work activity data while workers tied rebar using pliers, an automatic tier, and the automatic tier with an extension handle. NIOSH researchers are preparing a report for the contractor based on the data collected. More information on NIOSH Health Hazard Evaluations can be accessed at the newly updated HHE Web site, http://www.cdc.gov/niosh/hhe.



Traditional rebar tying
Photo by Earl Dotter

NIOSH Addresses "Control Banding" Issues

As the use of chemicals spread worldwide and financial and technological resources become scarce, methods for controlling harmful workplace exposures need to be enhanced. The global occupational health community has been working diligently to develop methods to protect workers from the adverse effects of exposure to hazardous chemicals. As nations emerge and develop, their citizens begin using more and more chemicals in their everyday life. Although these chemicals enhance lives they also have the potential for causing serious harm, especially if these chemicals are encountered in the workplace day after day.

Control banding is a creative, user friendly risk assessment approach to control hazardous chemical exposures in the workplace. Control banding organizes chemicals into exposure classes (bands) based on common properties, toxicity and volatility. Then, based on the use and quantity of the chemical, a hierarchy of control recommendations are suggested: substitution of the product, engineering controls, general ventilation and containment. The control banding concept has been used for many years in specific circumstances by a variety of organizations. The Health and Safety Executive of the United Kingdom (HSE) and the International Labor Organization (ILO) have developed specific tools that assist safety officials and employers in applying control banding techniques in the workplace.

In recognition of the growing importance of the control banding model, NIOSH is co-sponsoring the 2nd International Control Banding Workshop: Validation and Effectiveness of Control Banding. This two day practicum will be held at

the Hilton Cincinnati Netherland Plaza Hotel on March 1-2, 2004 and will provide attendees with information on the application of control banding and opportunities to collaborate on future research. For more information or to register for the meeting, visit http://www.acgih.org/events/course/controlbandwkshp.htm.

NIOSH Seeking Partners for Safety Product Development

During the week of January 26, the Division of Safety Research, Protective Technology Branch, published two announcements in the FedBizOpps seeking partners to manufacture, test, and market two safety products developed by NIOSH engineers. The first of the two products is offered under the heading, “Electrical Injury Protection System - A Personal Protective Equipment for Electrical Workers and Electricians.” This device is intended to protect workers from electrocution when working near energized electrical sources. The second product, “Wood Chipper Safety System,” is designed to protect workers from being caught-in, and potentially fatally injured by, industrial grade wood chipping devices. The solicitation of partners for these products represents a significant step forward as NIOSH continues to work towards moving research results to practical application. More information about either of these opportunities can be found at the following sites:

Electrical Injury: http://www.eps.gov/spg/HHS/CDCP/MNIOSH/Reference%2DNumber%2DRFI%2D2004%2DSR%2D00001/SynopsisR.html

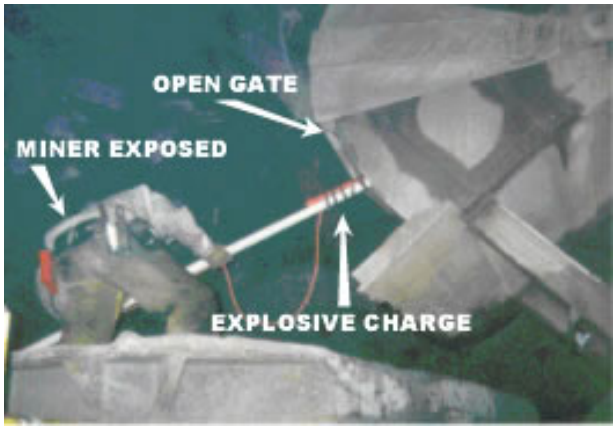
Wood Chipper:
http://www.eps.gov/spg/HHS/CDCP/MNIOSH/Reference%2DNumber%2DRFI%2D2004%2DSR%2D00002/SynopsisR.html

NIOSH Hosts Epidemic Intelligence Service Officers

The NIOSH Division of Respiratory Disease Studies hosted approximately 20 Epidemic Intelligence Service (EIS) officers at the NIOSH Morgantown, WV facility on December 8-9, 2003. These EIS officers, most with state or local assignments, along with staff from the National Center for Environmental Health (NCEH/CDC) and the Agency for Toxic Substances and Disease Registry (ATSDR/CDC) joined NIOSH EIS officers for an orientation to safety and health issues and concerns in the workplace. Organized by current EIS officer Margaret Kitt, the orientation informed the participants about NIOSH’s capabilities to provide technical assistance to health departments and opportunities for collaboration with NIOSH, NCEH, and ATSDR. Highlights from the presentations include an interactive case-study on workers in the popcorn industry, four hands-on demonstrations covering spirometry, respirators, the Coal Workers X-Ray Surveillance Program and NIOSH B-Reader Program, and the Division of Safety Research virtual reality laboratory. More information about the CDC EIS program can be accessed by http://www.cdc.gov/eis/. NIOSH EIS program information is available at http://www.cdc.gov/niosh/eis.html.

NIOSH and the Western Mining Research Center Hold Ore Pass Safety Workshop

Twenty-eight deaths and 31 serious injuries related to ore passes have occurred in underground metal mines in the United States since 1983. Miners have been crushed when freeing blockages, buried by flowing mud and rock, or have fallen into an open ore pass. To address the hazards of working around an ore pass and describe new information concerning the design and construction of safe ore passes, the NIOSH Spokane Research Laboratory, Spokane, WA, and the Western Mining Research Center, Colorado School of Mines, Golden, CO, collaborated on a workshop entitled "Ore Pass Analysis and Design" held at the Northwest Mining Association's 109th annual meeting December 2. Descriptions of current research involving hang-ups and flow of ore and waste rock in ore passes were presented in a series of



Miner placing explosive charge into an ore pass chute to break up a large rock

lectures, and two training CD's on ore pass safety practices and an ore-pass modeling package were handed out. Participants included mine engineers, foremen, safety professionals, and engineering contractors. For more information on ore pass safety, contact Steve Iverson at SIverson@cdc.gov or Bill Stewart at bgs4@cdc.gov.

Communication Products

New NIOSH Alert on Limiting Job Exposures to Food Flavorings and Flavoring Ingredients

NIOSH Alert: Preventing Lung Disease in Workers Who Use or Make Flavorings DHHS (NIOSH) Pub. No. 2004-110 recommends employers take measures to limit employees' occupational respiratory exposures to food flavorings and flavoring ingredients in workplaces where flavorings are made or used. The Alert, drawing on interim findings and recommendations from Health Hazard Evaluations (HHE), provides practical guidelines for recognizing and reducing potential occupational risks.

NIOSH learned of the occurrence of bronchiolitis obliterans, a severe lung disease, in workers at a microwave popcorn packaging plant, following a series of Health Hazard Evaluations. Results from these HHEs suggest that adverse effects may result from occupational inhalation exposures to high, airborne concentrations of some flavorings or their ingredients in the form of vapors, dusts, or sprays. The Alert can be accessed at http://www.cdc.gov/niosh/docs/2004-110.

Web Sightings

Funding Opportunities Web site Gets a New Look

NIOSH has recently completed the redesign of the Office of Extramural Programs Web site. The site contains information about the NIOSH extramural programs and lists the funding opportunities for research and training. The site also provides an informative section on the grants application process. The Web site is http://www.cdc.gov/niosh/oep.

New Isocyanates Topic Page

NIOSH has developed a new topic page focusing on isocyanates. Included are NIOSH documents on isocyanates and Health Hazard Evaluations related to possible isocyanate exposure. Isocyanates are widely used in the manufacture of polyurethanes, which include products such as rigid foams, flexible foams, durable coatings and adhesives, and are increasingly used in the automobile industry, auto body repair, and building insulation materials. Exposure to airborne isocyanates is known to cause a range of respiratory disorders, most notably occupational asthma. More information on isocyanates can be accessed at the new NIOSH Topic Page http://www.cdc.gov/niosh/topics/isocyanates.

New NIOSH Topic Page on Semiconductor Manufacturing

A new NIOSH topic page focuses on semiconductor manufacturing. Information on the potential hazards of chemicals used in this industry, NIOSH Criteria Documents and Current Intelligence Bulletins can be accessed from this site. The Web site is http://www.cdc.gov/niosh/topics/semiconductor.

News From Our Partners

American Industrial Hygiene Conference and Exposition (AIHce) 2004

The 2004 American Industrial Hygiene Conference and Exposition will be held May 8-13, 2004 at the Georgia World Congress Center in Atlanta, Georgia. The theme for this year's conference is "Discover New Ways of Promoting OEHS Excellence." For more information on the conference, visit http://www.aiha.org/aihce04/aihce.htm.

2004 American Society of Safety Engineer's Conference and Exposition

The American Society of Safety Engineers' 2004 Professional Development Conference and Exposition "Safety 2004: Advancing the Environmental Health and Safety Profession," will be held June 7-10, 2004 at the Las Vegas Hilton and Las Vegas Convention Center. NIOSH Director John Howard will speak at a special plenary session on Wednesday, June 9. More information is available at http://www.asse.org.

Upcoming Events

NIOSH B Reader Certification Program: Looking to the Future Open Meeting

An open meeting for the NIOSH B Reader Certification Program will be held on March 4, 2004 in McLean, Virginia. To register for the meeting, visit http://www2a.cdc.gov/drds/cwhsp/regform.html. For more information about the meeting, visit http://www.cdc.gov/niosh/pamphlet.html.

7th Annual Applied Ergonomics Conference

NIOSH and the National Occupational Research Agenda (NORA) Musculoskeletal Disorders and Intervention Effectiveness teams are among the co-sponsors of the "7th Annual Applied Ergonomics Conference" to be held on March 8-11, 2004 in Orlando, Florida. The conference, sponsored by the Institute of Industrial Engineers, will offer sessions around six educational tracks: manufacturing applications, services and support industries, office applications, engineering and design, ergonomics programs and potpourri. For more information on the conference, visit http://appliedergonetwork.iienet.org/pages/index.cfm?pageid=133.

Symposium on Silica: Sampling and Analysis

The "Symposium on Silica: Sampling and Analysis," sponsored by ASTM, will be held April 22-23, 2004 in Salt Lake City, Utah. NIOSH, the Occupational Safety and Health Administration, and the Mine Safety and Health Administration, along with the American Industrial Hygiene Association's Laboratory Quality Programs technical committees, and the National Institute for Standards and Technology will present their accomplishments in improving the quality of sampling and analytical procedures for determining occupational exposure to airborne silica-containing dusts. The Chairperson for the symposium is NIOSH Exposure Assessment Branch Chief Martin Harper. The final program and call for registrations can be accessed at http://www.astm.org/SYMPOSIA/D22_Symp.htm.

Long Working Hours, Safety, and Health: Toward a National Research Agenda

NIOSH, the University of Maryland School of Nursing, and the U.S. Department of Justice are co-sponsoring the "Long Working Hours, Safety, and Health: Toward a National Research Agenda" Conference to be held April 29-30, 2004 on the University of Maryland campus in Baltimore, Maryland. This innovative conference will explore the sociological, economic, and health dimensions of long work hours. For more information on the conference, visit http://nursing.umaryland.edu/longworkhours/index.htm.

Word of the Month

Goniometry: an engineering term describing the measurement of an angle or changes of angle between body segments connected by a joint.

From the Editor

While the goal of eNews is to provide you, the reader, with the latest research results, two articles in our January edition reported preliminary study results that had not yet been peer-reviewed. This is contrary to NIOSH's policy of not disseminating study results that have not been peer-reviewed. We regret this inadvertent action. NIOSH eNews will adhere to our policy of reporting only final peer-reviewed research results.